REDISCOVERY OF VAUCHERIA NASUTA IN MASSACHUSETTS[1]

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The genus *Vaucheria* is one of the most frequently encountered of the numerous cryptogamic plants (Webber & Wilce, 1971) common to New England salt marshes. Its turf-like growth habit on both muddy and marine peat substrates makes it a readily recognizable component of the marine algal vegetation.

Despite its prevalence, only four species of *Vaucheria* were known from the extensive tidal marshes in New England prior to 1953. At this time, four additional species were reported by Blum & Conover (1953) from the Woods Hole (Massachusetts) area, bringing the total number to eight. These eight species are: *Vaucheria compacta* (Collins) Collins; *V. litorea* C. Ag.; *V. piloboloides* Thur. (see, however, Blum, 1972, p. 29); *V. thuretii* Woron.; *V. arcassonensis* Dangeard; *V. coronata* Nord.; *V. intermedia* Nord.; and *V. minuta* Blum & Conover, as a new species. Shortly thereafter, a second new *Vaucheria* species, *V. vipera* Blum, was reported by Blum (1960) from a marsh at Essex, Massachusetts. Subsequently, at nearby Ipswich, the first record appeared (Webber, 1968) for the occurrence of *V. compacta* (Collins) Collins var. *koksoakensis* Blum & Wilce in the United States. This taxon was described originally for the North American continent from Labrador by Blum & Wilce (1958).

Thus, field and laboratory studies of *Vaucheria* species, as they occur in the extensive salt marshes of New England, continue to be fruitful areas of investigation for the marine botanist.

Within the past few months, this statement was reaffirmed with particular interest. In July, 1973, I visited a

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marsh adjacent to Jones Creek along the Annisquam River, Gloucester, collecting especially for marine Cyanophyta and *Vaucheria*.[2] Samples of the latter were taken from beneath a very dense cover of *Spartina patens* in the upper littoral portion of the marsh. In early September, 1973, I made additional collections of *Vaucheria* mats, this time at a marsh at the intersection of Crafts Rd. and State Rt. 128, Gloucester. The plants here formed a distinct line of growth at the *Spartina alterniflora-Spartina patens* interface, inhabiting not only the mud, but frequently growing upon the previous year's leaves and culms of *S. alterniflora*. Samples from both sites were maintained temporarily in dim light of a cold room (16°C.) at the Marine Science Institute.

On September 13, the *Vaucheria* plants, still vegetative, were returned to Keuka College for culturing. The conditions under which these samples were grown were: Erd-Schreiber medium (Provasoli, et al., 1957), a 14/10 LD cycle at approximately 75-100 f.c., and a temperature of 15°C. Under these conditions, reproductive structures were apparent within a month, and species identification was possible.

The plants from both sites in Gloucester were readily recognizable as *Vaucheria nasuta* Taylor & Bernatowicz, described originally from Bermuda (Taylor & Bernatowicz, 1952). A few years later, Bernatowicz (1958) published what appears to be the first account of this species in the United States. He located *V. nasuta* at the Barnstable Marsh (Cape Cod) in Massachusetts, finding it "sparingly reproductive" in the field during August. Ott (personal communication) has determined this species from North Carolina, and Blum (1971) has since recorded it from a California salt marsh. Thus, to date, the known world distribution of *Vaucheria nasuta* is from four somewhat disjunct localities: Bermuda, North Carolina, Massachusetts and California.

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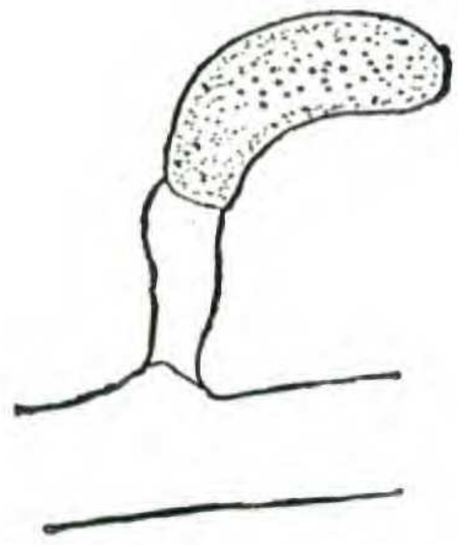

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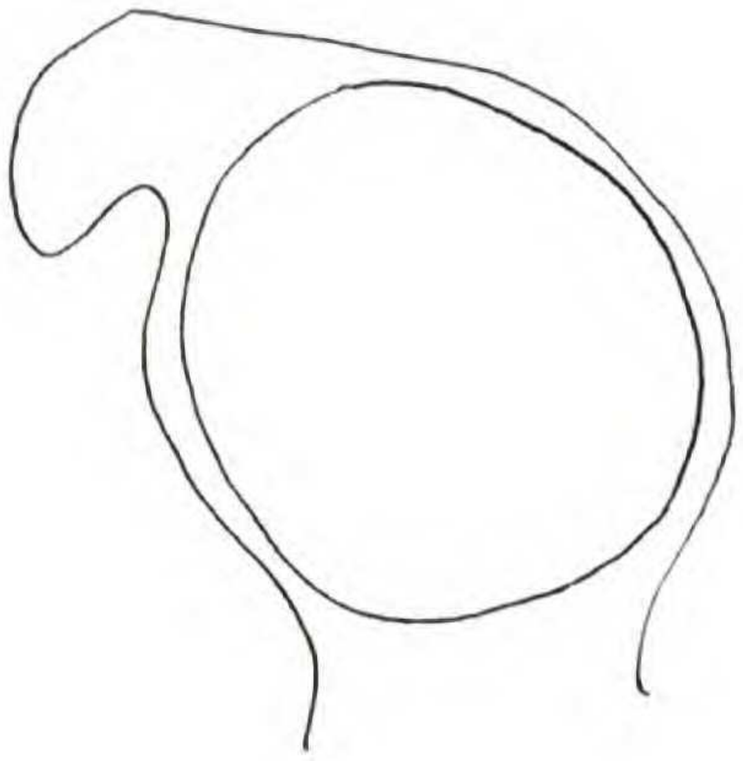

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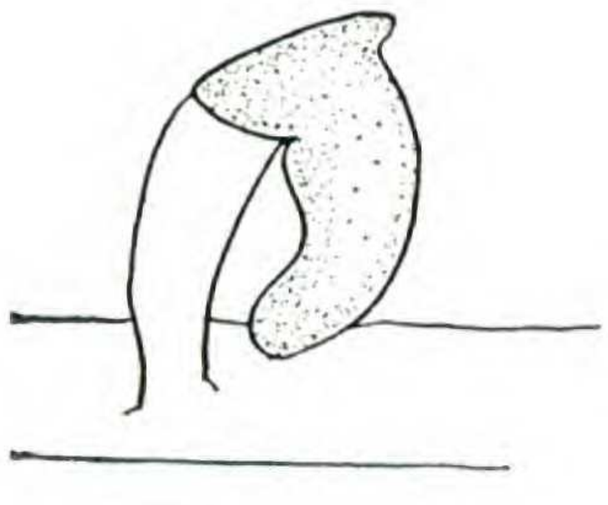

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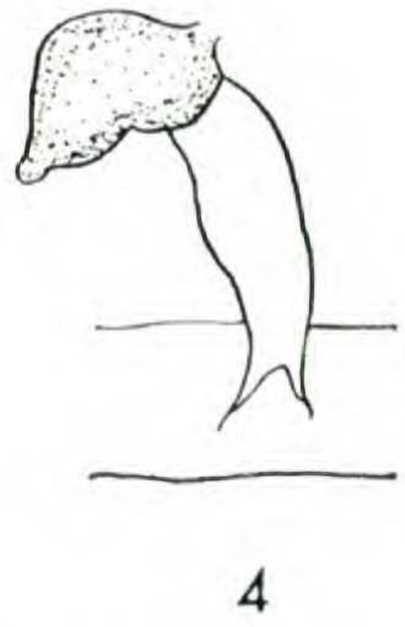

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Figures 1-5. *Vaucheria nasuta*, cultured material, from Gloucester. All figs. ×430.

Although somewhat larger in dimensions, the Gloucester plants agree generally with those measurements reported for the original Bermudian material. Filament diameters, both from field collections and from cultured plants, were (32μm) 43μm-51μm (60μm). *Vaucheria nasuta* is monoecious; the antheridia were usually scattered along the length of the filaments, and not immediately adjacent to the oogonia. In a few instances, however, they were clustered about an oogonium, essentially in the manner shown by Blum (1972, p. 41, Figs. 86-87). The male gametangia

consistently tapered to the base, were expanded slightly above, and measured 20-38μm in width. At maturity, each antheridium curved markedly toward the filament, not infrequently assuming a circular configuration (Fig. 1). Each antheridium is subtended by a hyaline basal cell which is cut off just after this young reproductive structure begins its bending posture (Figs. 2, 3). I observed one such basal cell which was divided as shown by Taylor & Bernatowicz (1952, *Pl.* II, Fig. 13). Discharge of antherozoids is effected either by a single terminal pore, or, more commonly, by one lateral and one terminal pore (Fig. 4). These pores are often slightly tubular. The oogonia (to 175μm long) are markedly beaked, and tend to be appressed toward the filament. The somewhat spherical oospores (150μm-200μm) almost fill the oogonia (Fig. 5).

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